

# ANNALS OF NATURAL HISTORY.

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XXVII.—*Remarks on the Greenland and Iceland Falcons, showing that they are distinct Species.* By JOHN HANCOCK\*.

[With a Plate †.]

THE Grey or Iceland Falcon (*Falco Islandicus*, Lath.) and the White Gyr (*Falco Gyrfalco*, Linn.) are at present considered, I believe, by most English authors as one species. Continental writers however disagree much on the subject; some assert that they are perfectly distinct; whilst others contend that they are the same species, varying only in consequence of age, sex, or climate. It seems strange that any difference of opinion should exist respecting species so characteristically marked as are those two birds. Our English naturalists, it is true, have had few specimens to examine, or at all events our public collections contain very few individuals; and judging from the scarcity of the species, it is not likely that many specimens have found their way into private cabinets. This is not the case with continental writers; they have been more fortunate in having numerous specimens before them, but by assuming that these birds go on changing their plumages year after year for a long period, they have been led into much confusion, and have not yet arrived at any satisfactory conclusion. This being the state of the question, and having recently had many opportunities of examining individuals of both the Iceland and the Greenland birds, I wish to lay before this meeting the result of such examination, more particularly as I feel a strong conviction that these birds are perfectly distinct. That my reasons for so considering them may be as clearly understood as possible, I shall, in the first place, detail what led me to this conviction. I shall then make some remarks by way of elucidation, and afterwards de-

\* Read in the Natural History Section of the Meeting of the British Association, Newcastle, and communicated by the author.

† This plate will be given in the SUPPLEMENT to the present volume.—  
EDIT.

scribe the two species in their various plumages. My attention was first drawn to the subject so far back as 1833 by two specimens brought from Iceland by Mr. Geo. C. Atkinson as the young of the Greenland or white species; one of those is now in my possession, and I am satisfied is a mature female of the true Iceland bird. At the time I was convinced that this was not an immature bird; the cordated markings on the breast and the transverse bars on the flanks were sufficient to prove this fact, and it was impossible for a moment to suppose that a bird so symmetrically and characteristically marked should be a mere variety of the Greenland or white falcon. I believed it to be a distinct species, and subsequent observations have confirmed me in this belief. I was afterwards fortunate enough, through the kindness of my friend Mr. Warham, of the Lord Gambier whaler from this port, to possess a bird from Davis' Straits, which is undoubtedly the young of the white bird; in fact it has already got a quill feather of the mature dress. This individual has longitudinal dashes or blotches on the under parts; a character indicative of youth in the *Falconidæ*, and which in this instance is perfectly analogous to the markings of the young of the peregrine falcon, a species most nearly allied. Afterwards I became possessed of another young bird which was shot in Yorkshire, March 1837. This has also the longitudinal markings on the under parts, and as might be expected, from the time it was taken, has commenced to shed its feathers, and has already got several new ones on different parts of the body. The fresh feathers are precisely similar to those of the bird from Iceland which I considered to be mature. This then was certainly the young of the Iceland bird. It differs from the young of the white bird in one striking particular, viz. that in having the bars on the two middle feathers of the tail *non-continuous*, or not opposing each other, whilst they are continuous in the young of the latter. (Pl. X. figs. A. and F.) All that was now wanting was to discriminate the sexes. I was enabled to do this through the kindness of Mr. W. Proctor, Curator of the Durham Museum, who visited Iceland last year for the purpose of procuring birds, and the other natural productions of that island. After the most indefatigable exertions he obtained five individuals of the true Iceland falcon. He shot them

all on the same crags. They are a brood with their two parents; there can be no doubt of this, for he saw the old birds bring food to the young ones, and he afterwards found in the same cliffs, and close to the spot where the birds were killed, an old nest which contained in the bottom of it a rotten egg buried in dung. Four of these birds were shot on the same day, the fifth was killed on the following: it was perched near to the nest. I had no difficulty in separating the old from the young, or of naming the sexes. Mr. Proctor's notes taken in Iceland afterwards proved that I was correct. The old female agrees exactly with the individual brought by Mr. Geo. C. Atkinson from Iceland. The male is similar to the female, only that he is a little brighter in colour, and like the rest of the falcons, is considerably smaller. The young are of course in the nest plumage (they were shot on the 3rd of August) and agree most accurately with the individual taken in Yorkshire, except that the plumage of the latter is a little faded on account of its greater age. It had undergone six months or upwards extra bleaching. The fading of the plumage is common to all birds. I possess a young peregrine which was shot previous to its moulting, and it is bleached down from the deep brown of the nest plumage to the colour of brown paper. All the young have the bars of the tail non-continuous, and another immature bird which Mr. Proctor also procured in Iceland has the same character. This peculiarity has likewise been observed by Benwicke, who says, in describing a young bird from Iceland, that "the bars of the tail are non-continuous." I had now before me male, female, and five young of the Iceland or grey species, and on examining these with the male, female, and young of the white or Greenland species, no doubt could exist, and the conclusion was easily arrived at, that the difference of these two birds is not at least the effect of sex or age, unless we adopt the theory common amongst ornithologists, that these birds go on varying in plumage for a series of years, even after they have attained their nuptial dress. This however I shall afterwards show is not the case. Faber, who resided some time in Iceland, and who is apparently well acquainted with the species of that island, can find no other way of escaping the necessity of acknowledging it to be a species, than by supposing that the

white or Greenland bird is "either an Iceland falcon in a very advanced age, or what" he is "much rather disposed to believe, an albino variety." With regard to the former part of his supposition, there is nothing that I am aware of in the history of the *Falconidæ* to warrant such an assumption. They do not, like most birds, shed the nest plumage in autumn, but retain it until the following spring, when they get the mature dress, and I know of no instance of any subsequent change of importance. This is the case with the peregrine falcon, which is very closely allied to the Iceland species. This fact is well known to falconers, though I believe doubted by many ornithologists. Capt. Bonham of the 10th Hussars, who has for many years kept a number of peregrines, showed me an individual which had got its mature plumage, and it was then only a year old. It had retained its nest plumage until the spring, when it moulted and at once assumed the mature dress, and he assured me this was always the case. This also takes place with the kestrel (*Falco Tinnunculus*, Linn.), and I believe with all the true falcons: occasionally the plumage may afterwards become a little brighter, but never any material change takes place; the markings retain their characters, and though the bird may be considered a finer and more distinctly marked individual, yet the plumage is identically the same in all essential points. We possess, however, the strongest proof that this is the case with the Iceland species. The Yorkshire specimen, though in the nest plumage, has, as before remarked, got several new feathers which are exactly like those of the adult, breeding individuals from Iceland; thus we have a proof that this species gets the *mature plumage immediately on shedding the nest feathers*; and in the two old birds we have evidence of the strongest nature that their plumage undergoes no further change, for it fortunately happens that they are also in the process of casting their feathers, and those that are *coming* are perfectly similar to the feathers of the previous year. Nothing can be more decisive. It needs no comment. The Iceland species then does not change after it has *attained* the breeding dress. Faber also remarks, that the Iceland bird is not mature, that is, it does not breed until it has got yellow legs: this is probably the fact; then if he be correct in supposing that the white or Greenland species is only an Iceland



bird in a very advanced age, how does it happen that white birds are found with blue legs? This very commonly occurs, and is characteristic of youth. The truth is, that these specimens with blue legs are birds of the previous spring and have just cast their grey or nest plumage, and have not yet attained the mature colouring of the feet; I have several specimens in this state, some of which are already changing to yellow. The want of this colour on the feet is one proof that the individual is young, and the spots on the breast of such specimens are generally more numerous and larger. The young of both species have the feet *blue at first*; they afterwards become of a full *bright yellow* in the Iceland bird, though it remains grey. This is not the case with the Greenland species, it *becomes white* before the *legs* are *yellow*, and they never attain the bright colour of the former, but continue of a pale livid yellow. The latter part of Faber's supposition needs scarcely any remark. It seems absurd to imagine a bird so symmetrically marked as the Greenland species, to be a mere variety. It is as characteristic in its appearance and varies as little as any of its congeners. There is no analogy whatever between this bird and those with which he compares it. The albino varieties of those birds to which he alludes occur perhaps one in a hundred. The Greenland or white bird, on the contrary, is more plentiful than the Iceland or grey. The exception, therefore, would be more numerous than the rule, an anomaly of no very common occurrence; and again, albino varieties are either entirely white or are entirely white in irregular patches, but the Greenland falcon is symmetrically marked, as before mentioned, and never becomes entirely white, and it varies from the Iceland bird not only in being whiter, but also in the markings of the plumage. In the former the feathers on the upper parts are white with arrow-shaped spots of dark, in the latter the upper plumage is slate colour or grey with lighter spots and bars. (Pl. X. figs. D. C. and G.) Perhaps it might be asked, is there not a white variety of the Iceland bird as well as a Greenland species? I believe not. I have a white individual from Iceland, and there is no perceptible difference between it and the many specimens I have seen and possess from Davis' Straits. In

fact there can be little or no doubt that the white one never breeds in Iceland, and that the individuals shot there are driven from their more northern haunts by the severity of the climate during the winter months. This view of the case is corroborated by a remark of Faber, who says, "I only met with white birds in winter, and these on the northern parts of the island (speaking of Iceland)"; and again, "The white variety is rather rare; I have met with it only in the winter months." And Mr. Proctor when there made frequent inquiries about the white gyrfalcon, and always received for answer that they were extremely rare. He at length, however, procured a skin from one of the natives, who said the bird was shot during the winter season. It appears to be doubtful whether or not the Iceland species inhabits Greenland. Fabricius and others, it is true, described grey birds as belonging to these regions, but it is difficult to say whether these are the young of the white gyrfalcon or are the Iceland *species*. From what I can learn I am very much inclined to think that this which I suppose to be a species is not a resident of those more northern countries, or at least is not common there. Messrs. Warham and Taylor, Captains of Davis' Straits whalers from this port, inform me that they see only white birds during the early part of the season, and it is not until the latter end of the year that grey ones make their appearance. This is just what might be expected, when we recollect that this bird, like its congeners, undoubtedly gets its mature dress or breeding plumage at the first moult: the nestlings of the previous season get the white plumage before the whalers arrive, and as they do not leave the fishing grounds until autumn, they then meet with the young of the year in the grey or nest plumage.

Brehm, who attempted to divide the two species, was unfortunate in possessing only young birds; this is apparent from his describing the Iceland bird as having blue legs, whilst its legs in a mature state are full yellow. He could never have met with the old bird or he could not have fallen into this error. Benwicke appears also to have laboured under the same mistake at the time he believed there were two species, for he described the one with *yellow legs* and dark spots on a white ground, the other with white spots on a dark ground

and *blue legs*, evidently considering the mature Greenland falcon as the one species and the young either of this or the Iceland bird as the other. He afterwards, however, united them, and believed he had obtained a thorough knowledge of the subject. He continues nevertheless in error. He describes the nest plumage no less than three times over as different ages. The first is from Iceland, and has the bars on the tail *non-continuous*, like the individuals I possess from that island. The other two are from Greenland, and vary very slightly, one having only a little more white than the other. This is of no importance whatever; all species are liable to vary in this way, and the young birds from the same nest brought by Mr. Proctor from Iceland vary as much or more than do those two which he has described as birds of different years. He afterwards described the mature Greenland falcon, but never mentions the mature Iceland: from this it is probable he had never seen it. Temminck, however, is acquainted with both species, but describes the mature Iceland falcon as the female of the Greenland bird. In this he is most certainly wrong, for I possess both the sexes of the mature Greenland bird, and the only difference perceptible is that the male is perhaps a little whiter. The markings are perfectly of the same character; and as we have before us male and female of the Iceland species, nothing more need be said on this head; and in fact Faber has settled this point of the question, for he has shown that the plumage of the Greenland bird is not occasioned by sex. Before I conclude I have to acknowledge my obligations to Dr. Charlton of Hesleyside for extracts from various German works and for the loan of others.

I shall now close this paper by describing the two species in their various plumages. I have retained Latham's name of *Islandicus* for the true Iceland species, as the most appropriate, it being, as far as I am aware, peculiar to that island, though I am much inclined to believe that the birds Audubon figures and describes as the Iceland or ger falcon is the young of this species, and the other species cannot perhaps be better named than after the country from which it is most abundantly procured. I therefore continue Linnæus' name of *Grœnlandicus*, which he gave the young bird.

*Falco Islandicus.* Ground of the upper plumage a dark

lead or mouse colour, barred and spotted with cream colour; under parts the ground is buff, marked with streaks, heart-shaped spots, and bars of dark mouse colour. Wings reaching to within about  $1\frac{1}{2}$  in. of the end of the tail.

Iceland falcon. *Pen. Arc. Zool.*, Addenda C, vol. i. p. 252.

Greenland falcon. *Pen. Arc. Zool.*, Addenda D, vol. i. p. 257.

Collard falcon, *Pen. Arc. Zool.*, vol. i. p. 158.

Falco gyrfalco, *Tur. Linn.*, vol. i. p. 158.

Iceland falcon. *Lath.* No. 50.

Dimensions. *Adult male*, length 1 ft. 9 in.; extent of wings 3 ft. 10 in.

*Description.* Bill lead colour, gradually darker towards the tip, with *two processes* in the upper mandible; irides dark brown; cere, orbits and feet bright yellow; crown, occiput, and cheeks cream colour, streaked with dark grey or mouse colour. The feathers of the upper parts dark slate colour, with two or more transverse cream-coloured bars sprinkled with ash, the bars increasing in number as the feathers increase in size, each feather with a narrow edging of the same; primaries several shades darker, with fourteen cream-coloured bars on the inner webs, with a few less conspicuous and broken bars on the outer webs. Tail rounded, consisting of twelve feathers of a dark grey, crossed with twelve or thirteen bars of cream colour mottled with ash; throat nearly white; breast and belly cream colour or buff, the former streaked and the latter marked with heart-shaped spots of the ground colour of the back; the flanks and under tail coverts transversely barred as in the peregrine, but the bars less numerous.

Dimensions. *Adult female*, length 1 foot 11 in.; extent of wings 4 feet 2 in.

*Desc.* In every respect like the male, excepting that she is considerably darker.

*Young* or nest plumage: bill, cere and legs dark blue; crown of the head and occiput cream colour, streaked with dark brown; the whole of the upper plumage the same, edged with cream colour, with a few spots of the same on the lower parts of the scapulars and greater wing coverts; under parts cream colour, marked longitudinally with closely set dark brown blotches, increasing in size on the vent and flanks;



thighs streaked with the same ; tail dark, with about ten ash-coloured bars (in some specimens these bars are cream colour), the bars on the two middle feathers *non-continuous*.

*Falco Grœnlandicus*. Ground of the plumage pure white ; upper parts elegantly marked with arrow-shaped spots of a dark grey ; under parts and head streaked with the same ; wings reaching to within 2 inches of the end of the tail ; second primary the longest.

Gyr falcon. *Pen. Arc. Zool.*, vol. i. p. 232.

*Falco Grœnlandicus*. *Tur. Linn.* (this is the young), vol. i. p. 147.

*Falco islandicus*. *Tur. Linn.*, vol. i. p. 155.

*Falco candicans*. *Tur. Linn.*, vol. i. p. 158.

Iceland falcon, var. *Lath.*, p. 71.

Spotted Iceland falcon, var. *Lath.*, p. 71.

Dimensions. *Adult male*, length, 1 foot 9 in.

*Desc.* Bill light horn colour, inclining to yellow, with the tip darker and a large process in the upper mandible ; cere, orbits, and feet pale yellow (in some specimens the upper parts of the toes are blue) ; ground of the whole plumage pure white ; crown streaked with narrow lines of dark ash ; on the occiput the streaks are a little larger, forming an obscure patch of darker. The feathers on the back scapulars and lesser wing coverts are deeply margined with white, the centre being dark ash ; in some the dark occupies the whole of the centre, in others (especially towards the lower parts) it is broken up into bars, sometimes on the outer web and sometimes on the inner ; the markings are arrow-shaped at the tip ; wing coverts, secondaries and primaries barred, the bars increasing in number in proportion as the feathers increase in size ; towards the tip of each of the primaries the dark bar is considerably larger, forming a spot at the tip of the wing ; this is very conspicuous when the bird is flying : the tail is rounded at the end, and consists of twelve feathers, which are white, except that the two middle ones are barred a little on each side of the shaft ; in some specimens all the feathers are barred, and in others they are all white ; all the under parts pure white, excepting a few dashes of dark ash on the flanks.

Dimensions.—*Adult female*, length, 1 foot 11 in. ; extent of wings, 3 feet 10 in.

*Desc.* In every respect like the male, except that the dark

is a little more in proportion to the white, and in some individuals the bill is furnished with two processes in the upper mandible, like the young of the preceding species, except that the bars on the two middle feathers in the tail are continuous.

NOTE.—The day after the above paper was read, two mature specimens were received from Iceland; they are male and female, and have just come through the moult, and correspond exactly in the markings with the breeding individuals brought by Mr. Proctor; they are, however, a little brighter in colour, occasioned principally by the freshness of the plumage, and certainly do not vary more than might be expected from the difference in the young from the same nest. I may also observe that all the mature specimens I have seen from Iceland, amounting to *seven* in number, have the upper mandible furnished with two processes; whilst in the many Greenland specimens I have examined, only two have had the double process, and these were apparently very old individuals.

#### EXPLANATION OF THE PLATE.

- A. Tail-feather of young *Falco Islandicus*. B. Primary of mature ditto.  
 D. Lesser wing-covert feather of ditto.  
 E. Primary of mature *Falco Grælandicus*. F. Tail-feather of young ditto. G. Covert feathers of mature ditto.

### XXVIII.—*On the Land and Freshwater Mollusca of Algiers and Bougia.* BY EDWARD FORBES.

[With Plates\*.]

DURING a visit to the regency of Algiers in May 1837, I obtained forty-five species of land and freshwater Mollusca, chiefly collected in the neighbourhood of the city of Algiers and of the town of Bougia (in the province of Constantine). M. Michaud, a distinguished French naturalist, published the year before a pamphlet entitled, ‘Catalogue des Testacés vivans envoyés d’Alger, par M. Rozet,’ in which he enumerates twenty-five species of land and freshwater shells; but a great part of these are not correctly speaking from Algiers, but from Oran (near Morocco), where the Fauna of Barbary assumes a different aspect, approximating to that of the Canaries on the one hand, and to that of Spain on the other.

\* These plates will form part of the SUPPLEMENT.